

## **REMARKS**

### **I. Introduction**

With the addition of new claims 38 and 39, claims 12 to 15, 17 to 19, and 21 to 39 are currently pending in the present application. In view of the following remarks, it is respectfully submitted that all of the presently pending claims are allowable, and reconsideration is respectfully requested.

Applicants request consideration of the previously filed Supplemental Information Disclosure Statement, 1449 paper, and cited references dated February 8, 2005.

### **II. Rejection of Claims 12 to 15, 17 to 19, and 21 to 37 Under 35 U.S.C. § 103(a)**

Claims 12 to 15, 17 to 19, and 21 to 37 were rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of U.S. Patent No. 5,802,290 ("Casselman"), U.S. Patent No. 5,889,982 ("Rogers et al."), and U.S. Pat. No. 4,682,284 ("Schrofer"), and U.S. Patent No. 5,970,254 ("Cooke et al."). It is respectfully submitted that the proposed combination of Casselman, Rogers et al., Schrofer, and Cooke et al. does not render unpatentable claims 12 to 15, 17 to 19, and 21 to 37 at least for the following reasons.

To establish a *prima facie* case of obviousness, the Office Action must demonstrate three criteria: (1) there must be some suggestion or motivation to one of ordinary skill in the art to modify a reference or to combine reference teachings; (2) there must be a reasonable expectation of success; and (3) the prior art reference (or references when combined) must teach or suggest each and every limitation in the claim under examination. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991).

Claim 12 relates to a system for reconfiguring a programmable unit, the programmable unit including a plurality of reconfigurable function cells in a multidimensional arrangement. The claimed system provides for:

*a FIFO memory shared by the plurality of reconfigurable function cells and coupled to the primary logic unit configured to store a plurality of configuration data associated with the plurality of reconfigurable function cells, the plurality of configuration data including the first configuration data.*

Claim 18 relates to a method for reconfiguring a programmable unit, the programmable unit including a plurality of reconfigurable function cells in a multidimensional arrangement. The claimed method provides for:

*storing, in a FIFO memory shared by the plurality of reconfigurable function cells, a plurality of configuration data associated with the plurality of reconfigurable function cells, that includes the first configuration data.*

Claim 25 relates to a system for run-time reconfiguration of a programmable unit, the programmable unit including a plurality of reconfigurable function cells in a multidimensional arrangement. The claimed system provides for:

*a FIFO memory shared by the plurality of reconfigurable function cells and coupled to the primary logic unit configured to store a plurality of configuration data associated with the plurality of reconfigurable function cells, the plurality of configuration data including the first configuration data, the first configuration data stored in the FIFO memory if the selected one of the plurality of reconfigurable function cells is not in a reconfiguration state, and the primary logic unit configured to reconfigure the selected one of the plurality of reconfigurable function cells if the selected one of the plurality of reconfigurable function cells is in a reconfigurable state.*

Claim 36 relates to a system for reconfiguring a programmable unit, the programmable unit including a plurality of reconfigurable function cells in a multidimensional arrangement. Claim 36, as herein amended without prejudice, provides for:

*a FIFO memory shared by the plurality of reconfigurable function cells . . . wherein the primary logic unit is configured to check a reconfigurability state of the selected one of the plurality of function cells, reconfigure the selected one of the plurality of function cells according to the selected configuration data upon a condition that the selected one of the plurality of function cells is in a reconfigurable state, and otherwise store the selected configuration data in the FIFO memory.*

Claim 37 relates to a method for deadlock-free run-time reconfiguration of a programmable unit, the programmable unit including a plurality of reconfigurable function cells in a multidimensional arrangement. Claim 37, as herein amended without prejudice, provides for:

*in response to a determination that the configuration data associated with the selected at least one function cell is not stored in the FIFO memory [shared by the plurality of reconfigurable function cells] and upon a condition that the determination is made, retrieving configuration data associated with the selected at least one function cell from another configuration memory;*  
*and*

*if a state of the selected at least one function cell is not a reconfiguration state, storing the retrieved configuration data in the FIFO memory.*

The Office Action admits that Casselman does not disclose a FIFO memory, and instead refers to Schrofer as allegedly disclosing this feature. The Office Action admits that Schrofer does not disclose a memory shared by a plurality of reconfigurable functions cells for storage of configuration data associated with the plurality of reconfigurable function cells, and instead refers to Cooke et al. as allegedly disclosing a memory shared by a plurality of reconfigurable cells for storage of configuration data. The Office Action asserts that the

combination of Schrofer and Cooke et al. therefore discloses or suggests a FIFO memory shared by a plurality of reconfigurable cells for storage therein of configuration data.

However, Schrofer relates to a queue for queuing read and write requests for a single unit. Cooke et al., on the other hand, relate to a memory structure including a plurality of separate memory planes, each for storing configuration data for a corresponding one of a number of cells. These references are therefore within two entirely different fields of endeavor. It is thus respectfully submitted that a person of ordinary skill in the art seeking to modify the memory stack of Cooke et al. would not look to the field of read/write request queuing, and would not look to the field of a shared memory arrangement.

Furthermore, the mere fact that references *can* be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680 (Fed. Cir. 1990). None of the cited references teaches or suggests the notion or desirability of using a *common* FIFO queue for storing configuration data for multiple reconfigurable functional cells. In Applicants' claimed system, a purpose of the shared queue is to cause *other cells* to wait for the completion of processing at a given cell. This is most conveniently achieved using the claimed shared FIFO queue. The FIFO of Schrofer is used as a queue of read/write requests for a single unit. The arrangement does not provide for a memory arrangement that causes one unit for which data is queued on the memory to wait on another unit. The memory of Cooke et al. is not a FIFO memory, and it too does not have this effect. None of the cited references discloses or suggests a desire to provide a memory arrangement of this type. Thus, none of the cited references teaches or suggests the Examiner's proposed combination of Schrofer and Cooke et al. for providing a FIFO memory shared by a plurality of reconfigurable cells for storage of associated configuration data.

Indeed, the Office Action is merely improperly picking and choosing disparate features of the various patents in an effort to support the present rejection despite the fact that none of the references relied upon provides any suggestion or motivation to make the proposed combination, and is apparently relying on an improper hindsight reconstruction based on Applicants' disclosure, which cannot be used for rejecting the claims of the present application.

In view of all of the foregoing, it is respectfully submitted that the combination of Casselman, Rogers et al., Schrofer, and Cooke et al. does not render unpatentable any of claims 12, 18, 25, 36, and 37.

Furthermore, with respect to claim 37, claim 37 recites “in response to a determination that the configuration data associated with the selected at least one function cell is not stored in the FIFO memory . . . retrieving configuration data associated with the selected at least one function cell from another configuration memory.” For clarity, claim 37 has been amended herein without prejudice to recite “reading entries of a FIFO [and] determining *whether configuration data associated with the selected at least one function cell is stored in the FIFO memory.*” The Office Action (with reference to the rejection of claim 13) refers to Schrofer as allegedly disclosing or suggesting these features. However, Schrofer refers to checking whether the queue is empty. If it is not empty, then the read/write request is queued. Schrofer does not refer to reading the queue to determine whether specific data is stored therein. Accordingly, it does not disclose or suggest reading entries of a FIFO memory to determine whether the memory includes in particular *configuration data associated with the selected at least one function cell is stored in the FIFO memory*, such that if the particular data, i.e., the *configuration data associated with the selected at least one function cell is stored in the FIFO memory*, configuration data is retrieved from a different memory in response to the determination, e.g., even if the memory includes other entries.

Furthermore, claim 37 has been amended herein without prejudice to recite that the configuration data is retrieved from another memory upon a condition that it is determined that the FIFO does not include configuration data associated with the selected cell. Thus, according to the method of claim 37, if the FIFO memory includes configuration data associated with the selected function cell, then configuration data for the selected cell is not retrieved from another memory. In Schrofer, if a read/write request is made and it is determined that the queue includes other queued requests, then the read/write request is added to the queue. According to the method of claim 37, however, if it is determined that the configuration data associated with the selected cell is in the FIFO memory, then configuration data for the selected cell is not retrieved (or stored in the FIFO).

None of the cited references, nor their combination, discloses or suggests a method according to which after reading entries of a FIFO, configuration data associated with a selected cell is retrieved even if the FIFO includes configuration data (as long as it is not configuration data associated with the selected cell), according to which the configuration data is not retrieved (and therefore also not stored in the FIFO) if the FIFO includes an entry with configuration data associated with the selected cell, and according to which, after it is determined that the FIFO does not include configuration data associated with the selected cell and configuration data for the cell is therefore retrieved from a different memory, the

configuration data is stored in the FIFO if the selected cell is not in a reconfigurable state, as recited in claim 37.

For these additional reasons, it is respectfully submitted that the combination of Casselman, Rogers et al., Schrofer, and Cooke et al. does not render unpatentable claim 37.

As for claims 13 to 15, and 17, which ultimately depend from claim 12 and therefore include all of the features recited in claim 12, it is respectfully submitted that the combination of Casselman, Rogers et al., Schrofer, and Cooke et al. does not render unpatentable claims 13 to 15, and 17 for at least the same reasons given above in support of the patentability of claim 12. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988) (any dependent claim that depends from a non-obvious independent claim is non-obvious).

As for claims 19, and 21 to 24, which ultimately depend from claim 18 and therefore include all of the features recited in claim 18, it is respectfully submitted that the combination of Casselman, Rogers et al., Schrofer, and Cooke et al. does not render unpatentable claims 19, and 21 to 24 for at least the same reasons given above in support of the patentability of claim 18. *Id.*

As for claims 26 to 35, which depend from claim 25 and therefore include all of the features recited in claim 25, it is respectfully submitted that the combination of Casselman, Rogers et al., Schrofer, and Cooke et al. does not render unpatentable claims 26 to 35 for at least the same reasons given above in support of the patentability of claim 25. *Id.*

In view of the foregoing, withdrawal of this rejection is respectfully requested.

### **III. New Claims 38 and 39**

New claims 38 and 39 have been added herein. It is respectfully submitted that new claims 38 and 39 do not add any new matter and are fully supported by the present application. Claim 38 ultimately depends from claim 12 and is therefore patentable over the cited references for the same reasons set forth above in support of the patentability of claim 12. Claim 39 ultimately depends from claim 18 and is therefore patentable over the cited references for the same reasons set forth above in support of the patentability of claim 18.

**IV. Conclusion**

In light of the foregoing, it is respectfully submitted that all of the presently pending claims are in condition for allowance. Prompt reconsideration and allowance of the present application are therefore earnestly solicited.

Respectfully submitted,

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